An Exploratory Analysis of Motorcyclist Apparel Using Naturalistic Riding Data

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Data Collection

- Participants volunteered to ride normally as video and sensor data were collected for every trip (key on/key off)
- 46 participants’ data analyzed (1211 trips)
  - These were riders with videos available for a substantial number of their completed trips
  - Trips representative of unique month/day/time of day
- At the time of analysis, participation ranged from 5 to 16 months
- Bike types: Cruiser, Touring, Sport
- Installation sites: California, Florida, Virginia
Video Reduction

- Five video views (rider’s face, forward, rear, left, right)
- Video review to characterize rider apparel
  - Torso clothing
  - Helmet
  - Gloves
  - Eyewear
- Reductionist coded conditions that existed for most of the trip
  - If indeterminable, coded where speed first exceeded 20 mph (or highest speed if trip speed remained < 20 mph)
Variables

- Weather
- Time of Day
- Clothing (Torso)
  - Type (based on material/coverage)
  - Armor
  - Color
  - Reflectivity
- Helmet
  - Usage
  - Type
  - Color
- Gloves
  - Usage
  - Type
  - Color
- Eyewear
  - Usage
  - Type
## Sample Descriptors

### Trip and Participant Distribution

<table>
<thead>
<tr>
<th>Time of Day</th>
<th>Number of Trips</th>
<th>Percentage of Trips</th>
<th>Number of Participants</th>
<th>Percentage of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Twilight AM</td>
<td>51</td>
<td>4.2%</td>
<td>16</td>
<td>34.8%</td>
</tr>
<tr>
<td>Day</td>
<td>653</td>
<td>53.9%</td>
<td>46</td>
<td>100.0%</td>
</tr>
<tr>
<td>Twilight PM</td>
<td>219</td>
<td>18.1%</td>
<td>39</td>
<td>84.8%</td>
</tr>
<tr>
<td>Night</td>
<td>288</td>
<td>23.8%</td>
<td>36</td>
<td>78.3%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1211</strong></td>
<td><strong>100%</strong></td>
<td>****</td>
<td>****</td>
</tr>
</tbody>
</table>
Sample Descriptors

1211-Trip Distribution Across Month and Time of Day

Total Number of Trips

Month

Time of Day

Day (n=653)
Night (n=288)
Twilight PM (n=219)
Twilight AM (n=51)
Percentage of Trips Including Each Clothing Type

Percentage of Trips

Clothing (Torso) Type

- Full Jacket Zipped, Non-leather
- Full Jacket Zipped, Leather
- Shirt, Short-sleeved or Tank
- Shirt, Long-sleeved
- Partial Jacket/Nest Zipped, Leather
- Partial Jacket/Nest Zipped, Non-leather
- Full Jacket Unzipped, Leather
- Unknown
- Other Categories
Percentage of Participants Observed Wearing Each Clothing Type

Percentage of Participants

- Full Jacket Zipped, Non-leather
- Full Jacket Zipped, Leather
- Shirt, Short-sleeved or Tank
- Shirt, Long-sleeved
- Partial Jacket/Vest Zipped, Leather
- Partial Jacket/Vest Zipped, Non-leather
- Full Jacket Unzipped, Leather
- Unknown
- Other Categories

Clothing (Torso) Type
Percentage of Participants Observed Wearing Glove Type

- Full: 100%
- None: 80%
- Open-Fingered: 20%
- Unknown: 0%

Glove Type
Percentage of Participants Observed Wearing Eyewear Type

- **Face Shield**
- **Glasses**
- **None**
- **Unknown**

**Eyewear Type**

**Percentage of Participants**

- 80%
- 70%
- 60%
- 50%
- 40%
- 30%
- 20%
- 10%
- 0%
Conclusions

• Majority of the participants (43 of 46) tended to ride more during the day
• Wide variation in torso clothing
  • 93% of riders at some point wore full zipped jackets; 67% at some point wore short-sleeved shirts or tank tops
  • 72% of participants wore armor sometimes or always; 28% never wore armor
• 33% of participants always wore gloves; 11% never wore gloves
Conclusions

- Helmet usage, even in states with no helmet law, was common
  - 78% of participants always wore helmets; no participant was always without a helmet
  - Only 4 out of the 10 riders based in states with no helmet law were observed at some point without a helmet
- Observational data indicate that participants tended to vary their choices in clothing and protective gear
Questions?
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